Easy! Smooth!

Replacement Guidebook

GP-3310T Series

->SP-5400WA(Advanced Display)

  + SP-5B10(Power Box)

The 1st Edition Nov 2014

Preface

This guidebook introduces the procedures to replace a unit in GP-3310T series with a SP-5400WA+SP-5B10.

Model in use	Model No.	Recommended Substitution
GP-3310T	AGP3310-T1-D24	SP-5400WA (Advanced Display) + SP-5B10 (Power Box)

'Display' and 'Box' of SP5000 series can be separated, so you can freely select a suitable combination of them according to use. This guidebook introduces specifications for a combination of SP-5400WA (Advanced Display) that is a 7-inch wide display module and SP-5B10 (Power box) that is a box module.

Safety Information

HAZARD OF OPERATOR INJURY, OR UNINTENDED EQUIPMENT DAMAGE

Before operating any of these products, be sure to read all related manuals thoroughly.

Failure to follow these instructions can result in death, serious injury or unintended equipment damage.

Contents

Chapter 1 Specification Comparison

1.1 Specifications of GP-3310T and SP5000 series

	GP3000 series	SP5000 series
	GP-3310T	SP-5400WA （Advanced Display) + SP-5B10 (Power box)
Display Type	TFT Color CD	
Display Colors	65,536 colors (without blink) / 16,384 colors (with blink)	**UP!** 262,144 colors (without blink) / 65,536 colors (with blink)
Display Resolution	VGA (640×480 pixels)	**NEW!** WVGA (800×480 pixels) -> see 2.2
Panel Cutout Dimensions	W156.0×H123.5mm	**NEW!** W190 x H135mm -> see 2.3
External Dimensions	W167.5×H135×D59.5mm	**NEW!** W203.6×H148.6×D67mm *1 -> see 2.3
Touch Panel Type	Resistive film (Analog)	
Memory	**Application**	8MB	**UP!** 64MB
	SRAM	SRAM: 320KB	**NEW!** NVRAM: 320KB
Backup Battery	Secondary Battery (Rechargeable Lithium battery)	**NEW!** - -> see 2.7
Input Voltage	DC24V	**NEW!** DC 12 to 24V
Serial I/F	**COM1**	D-Sub9 pin (plug) RS-232C/422/485	D-Sub9 pin (plug) RS-232C/422/485
	COM2	D-Sub9 pin (socket) RS-422/485	**UP!** D-Sub9 pin (plug) RS-232C/422/485 ->see 2.5.1 chap.4
Ethernet I/F	1 port	**UP!**

		2 ports
CF Card I/F	✔	- ->see 2.5.4
SD card I/F	-	**NEW!** ✔ ->see 2.5.4

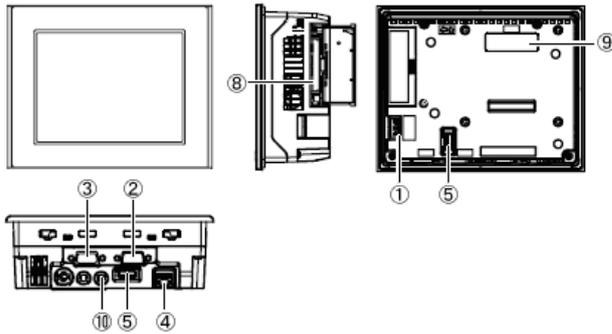*1: Size for the time when SP-5400WA (Advanced Display) is combined with SP-5B10 (Power box) .

Chapter 2 Compatibility of Hardware

2.1 Locations of connector

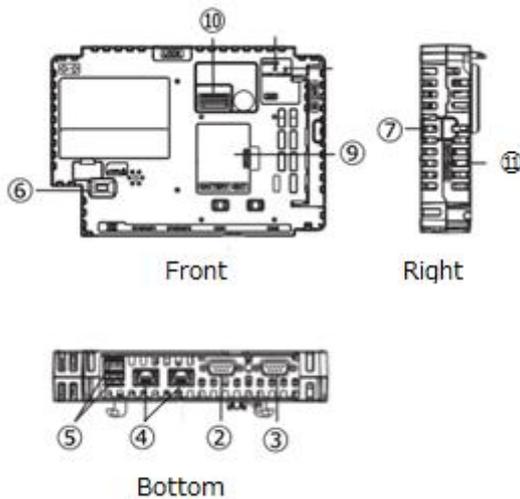Connector locations of GP-3310T series and SP5000 series;GP-3310T

GP-3310T

SP-5400WA(Advanced Display)

SP-5B10(Power box)

Front   Right

Bottom
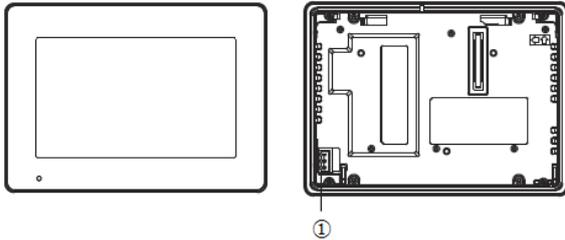
Interface names

	GP-3310T	SP-5400WA (Advanced Display) + SP-5B10 (Power box)
1	Power Connector　(DC)	Power Connector　(DC)
2	Serial I/F　(COM1)	
3	Serial I/F　(COM2)	
4	Ethernet I/F	
5	USB　I/F　(Type A)	
6	-	USB I/F　(Type mini B)
7	-	Storage Card Cover (There's a SD card I/F for storage under the cover.)
8	CF card I/F	-
9	Expansion Unit I/F (Communication Unit)	
10	Auxiliary I/O / Sound Output I/F　(AUX)	
11	-	System Card Cover (There's a SD card I/F for the system under the cover.)

2.2 Display Resolution

The display resolution of GP-3310T is different from that of GP-5400WA. For GP-5400WA, the screen area gets larger by 80 pixels right and left. If you draw on a full screen, please edit it with GP-Pro EX.

If you check on [Convert Resolution] when changing the Display Unit type (as shown below), you can adjust both size and location of the part and the text relative to the display resolution automatically. But please note that their width gets larger due to change of horizontal resolution of the screen area. In this case, confirm their size and location and adjust them if necessary.
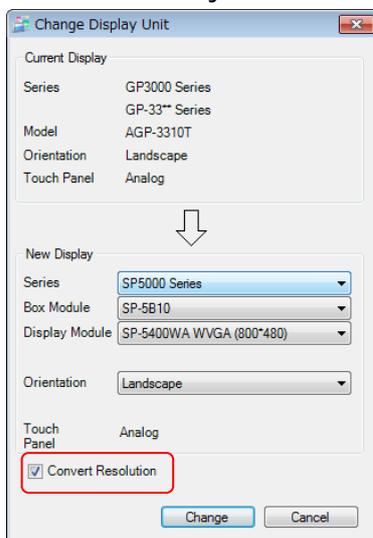
To know its details and how to change the Display Unit type, see [3.4 Change Display Unit Type].

2.3 Panel Cutout Dimensions and External Dimensions

For replacing GP-3310T with SP-5400WA+SP-5B10, the panel cutout dimensions and External Dimensions get larger. It's necessary to process the panel.

2.4 USB Transfer cable

Like the GP3000 series, a USB transfer cable （CA3-USBCB-01） can be used for the SP5000 series. Also, a USB （Type mini B） cable （ZC9USCBMB1） and commercial cables can be used on the SP5000 series' side.

	Model	Connector Type	Connector on Display

Options	CA3-USBCB-01		USB　(Type A)
	ZC9USCBMB1		USB　(Type mini B)
Commercial Item	-		

2.5 Interface

2.4.1 Serial Interface

The SP5000 series has a COM port on the side of SP-5B10 (Power box).
The pin array and the shapes of the plug and the socket differ between GP-3310T COM2 port and SP-5B10 (Power box) COM port. The PLC connection cable that used to be connected to GP-3310T via its COM2 port cannot be used as it is. For details, refer to "Chapter 4 Communication with Device/PLC". Cables other than that can be used for SP-5B10 (Power box) as they are.

2.5.2 Auxiliary I/O Interface (AUX)

SP-5B10 (Power box)　has 'Auxiliary I/O Interface　(AUX) , but either Alarm Output or Buzzer Output can be used　(Alarm Output and Buzzer Output can be switched to each other on GP-Pro EX.) . Note that RUN Output and External Reset Output that used to be used for GP-3310T cannot be used anymore.

2.5.3 Sound Output Interface

The output value has been increased from 70mW to 300mW. Please take note of it when you use an amplifier.

2.5.4 CF Card Interface

SP5000 series is not equipped with a CF card slot. But a SD card slot and a USB interfaces are installed. In order to use the GP-3310T data saved in the CF card and the functions using the CF card, use a SD card or a USB flash drive instead.

SP-5B10 (Power box)　has 2 SD card interfaces, one for the system and the other for backup. Use the interface of the SD card for backup.

* When using a SD card with SP-5B10 (Power box), please verify it supports the following specifications:

	File format	Maximum capacity
SD	FAT16	2GB
SDHC	FAT32	32GB

When the setting of the output destination folder is set to "CF Card" on GP-Pro EX, if you change the display unit type, the setting will automatically change to the one that uses a SD card.

To change the setting of the output destination folder, see [5.1 Changing the setting of the external media to use].

2.6 Peripheral units and option units

2.5.1 Barcode/ 2D [two-dimensional] code reader connection

Like GP-3310T, SP5000 series allows you to connect a barcode reader to its USB interface （Type A） or its serial interface. In replacing GP3000 series with SP5000 series, verify proper operation of the barcode/2D code reader before use.

2.6.2 Printer connection

Like GP-3310T series, SP5000 series allows you to connect a printer on its USB interface （Type A）. In replacing GP3000 series with SP5000 series, verify proper operation of the printer before use.
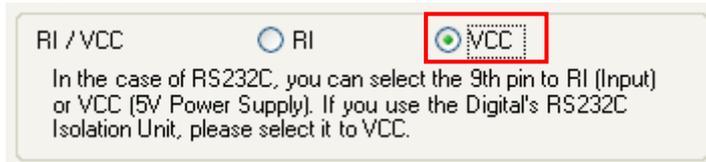
2.6.3 Expansion Unit

SP5000 series is not supported with an expansion unit interface. The expansion unit （each kind of unit like CC-LINK Unit, VM unit） for GP3000 series cannot be used.

2.6.4 Isolation Unit

RS-485 isolation unit for GP-3310T (CA3-ISO485-01) cannot be used for SP-5B10 (Power box) . You can use the RS-232C isolation unit (CA3-ISO232-01) for SP-5B10 (Power box) instead. (The communication method is switched with this unit's DIP switch.)

Note for using RS-232C isolation unit (CA3-ISO232-01)
・ Connect it to SP5000 series via COM1 (232C) . ・ In the case of RS-232C, it's necessary to set the 9th pin of the COM port to VCC. [Settings on GP-ProEX] Select "VCC" from [System Settings] -> [Device/PLC] in the [Project] menu on GP-Pro EX. RI / VCC   ○ RI   ⊙ VCC In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC. ・ RS-422/485 (2-wire type) communication and serial multilink are not supported.

2.7 Backup Battery

Backup clock data uses a Supercapacitor (electric double-layer capacitor) for power. When the voltage from the Supercapacitor is low, clock data is lost*1 when this product is turned OFF. The average period for backup is as follows:

- Initial: Approximately 100 days
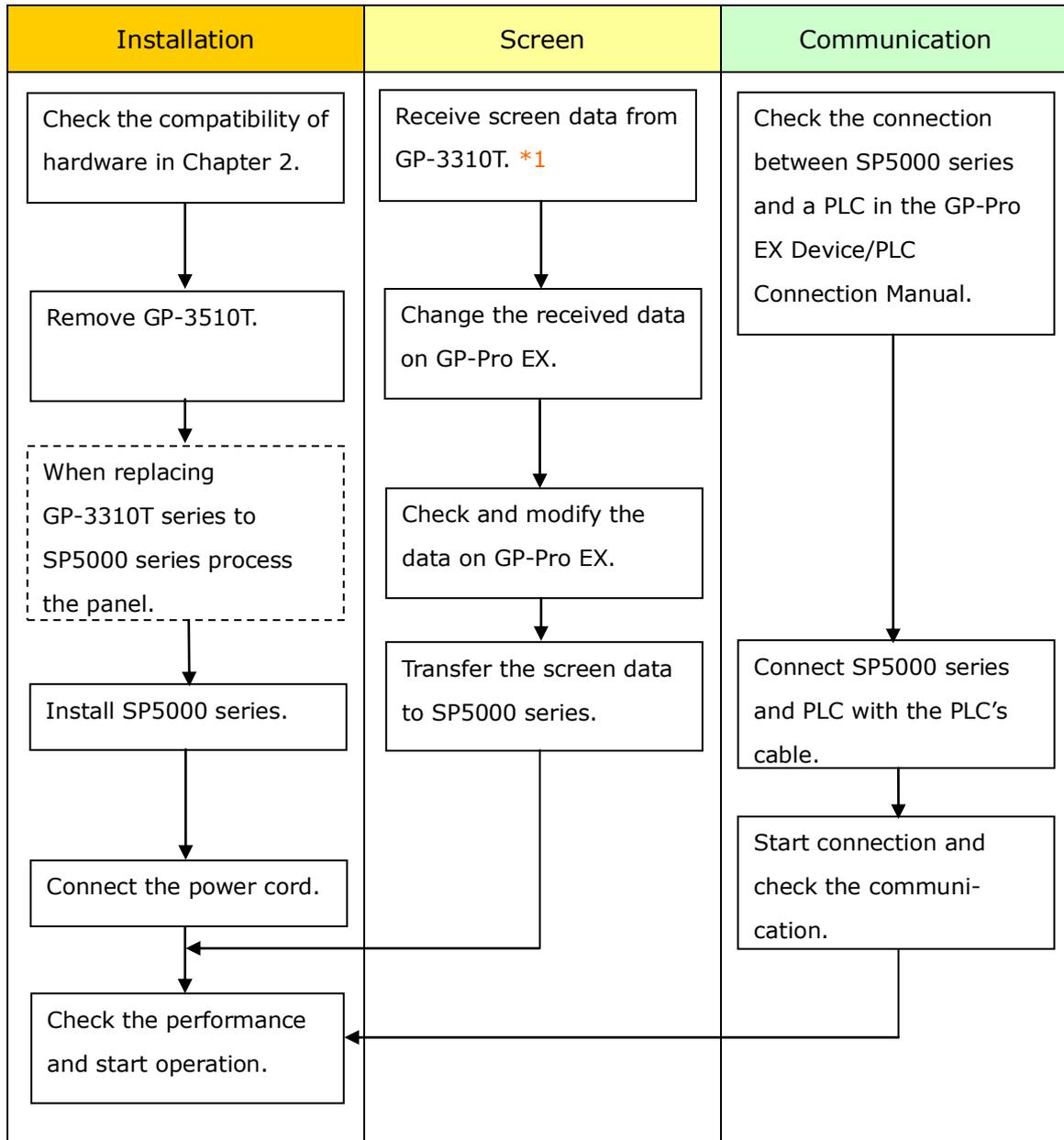- After 5 years: Approximately 30 days (used at ambient temperature of 25 °C [77 °F])

By connecting the Battery for Memory Backup (Model Number PFXZCBBT1) accessory, you can set up a backup period of up to 10 years or more.

2.8 Other Notes

- Do not expose SP5000 series to direct sunlight.
- Do not use SP5000 series outdoors.
- Do not turn on SP5000 series if condensation has occurred inside the device.
- When you are continuously using SP5000 series without oxygen, the brightness might decrease. Please ventilate the control panel periodically.

Chapter 3 Replacement Procedure

3.1 Work Flow

Installation	Screen	Communication
Check the compatibility of hardware in Chapter 2.	Receive screen data from GP-3310T. *1	Check the connection between SP5000 series and a PLC in the GP-Pro EX Device/PLC Connection Manual.
↓	↓	
Remove GP-3510T.	Change the received data on GP-Pro EX.	
↓	↓	
When replacing GP-3310T series to SP5000 series process the panel.	Check and modify the data on GP-Pro EX.	
↓	↓	↓
Install SP5000 series.	Transfer the screen data to SP5000 series.	Connect SP5000 series and PLC with the PLC's cable.
↓		↓
Connect the power cord.		Start connection and check the communication.
↓		
Check the performance and start operation.		

*1: This step is required if screen data is saved only in the GP unit, not in any other device.

3.2 Preparation

Requirements for receiving screen data from GP-3310T*1	PC in which GP-Pro EX Transfer Tool is installed. *2
	USB Transfer Cable　(model: CA3-USBCB-01) * Possible to send/receive a screen via a CF card, a USB storage device or Ethernet.
Requirements for converting screen data of GP-3310T and transferring the converted data to SP5000 series.	PC in which GP-Pro EX Ver.3.01 or later is installed.
	Transfer Cable　(The following three types of cables are available) ・A USB transfer cable　(model: CA3-USBCB-01) ・A USB data-transfer cable　(model: ZC9USCBMB1) ・A commercial USB cable　(USB Type A/mini B) * Possible to send/receive a screen via a SD card , a USB storage device or Ethernet.

*1: This step is required if screen data is saved only in the GP unit, not in any other device.

*2: Please use the same version or later as or than that of the software used during creating screens on GP-3310T. If you don't know the version, we recommend you to use the newest version. For the newest version, you can download the transfer tool from our web site called [OtasukePro!] (http://www.pro-face.com/otasuke/download/freesoft/gpproex_transfer.htm) .

3.3 Receive screen data from GP-3310Tseries
You can transfer data to GP-3310Tvia;

・ A USB transfer cable (model: CA3-USBCB-01)

・ A CF card/USB storage device

・ Ethernet (for GP-3500 series only)

But this section explains, as an example, how to receive screen data from
GP-3310Tusing a USB transfer cable (model: CA3-USBCB-01) .

If you have backed up screen data, this step is unnecessary, skip to the next section
[3.4 Change the Display Unit Type].

PC   USB transfer cable
                       (CA3-USBCB-01)   HMI

(1) Connect your PC and GP-3310Twith a USB transfer cable.

If the driver of the cable has not been installed on your PC yet, a dialog box will appear. Please follow the instructions.
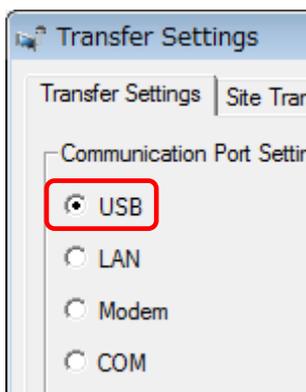
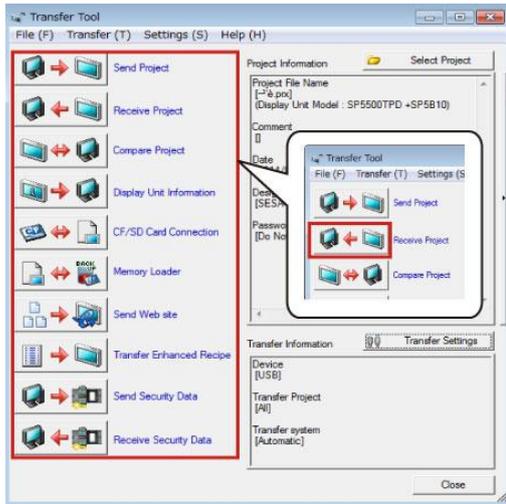| NOTE |
| --- |
| · The "Hardware Installation" dialog box as shown below may appear during installing the USB driver depending on the security level of Windows®. Click [Continue Anyway] to start installing the driver. When installation is completed, click [Finish].

 |
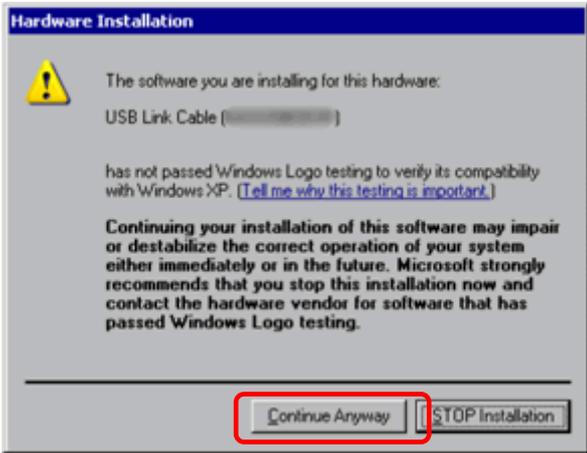
(2) Start the Transfer Tool of GP-Pro EX.
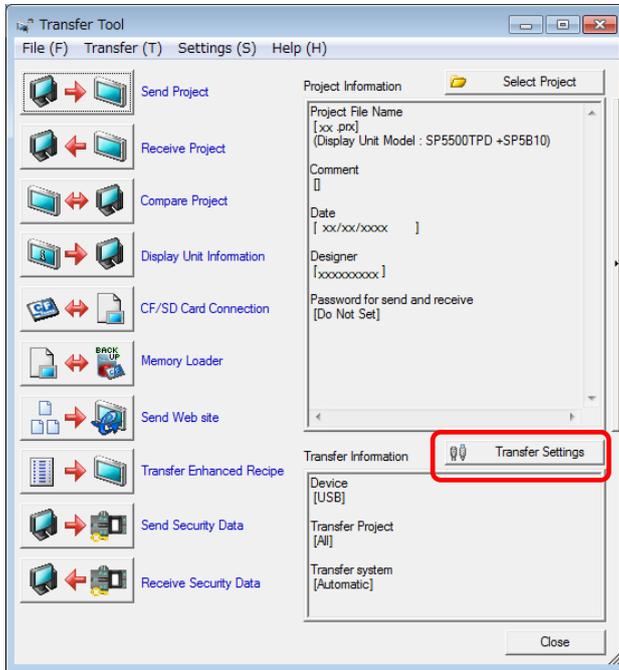
(3) Make sure that the [Device] in the "Transfer Settings Information" is set to [USB].

   If not, click the [Transfer Setting] button to open the "Transfer Setting" dialog box.

   Select [USB] in the Communication Port Settings field and click [OK].

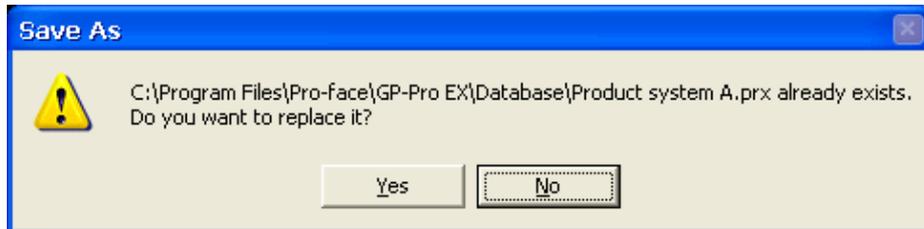(4) Start GP-Pro EX Transfer Tool and click the [Receive Project] button.

(5) Click [Receive Project], and the following dialog box will appear. Specify a place to save the received data in and a project file name, and then click [Save] to start transfer.
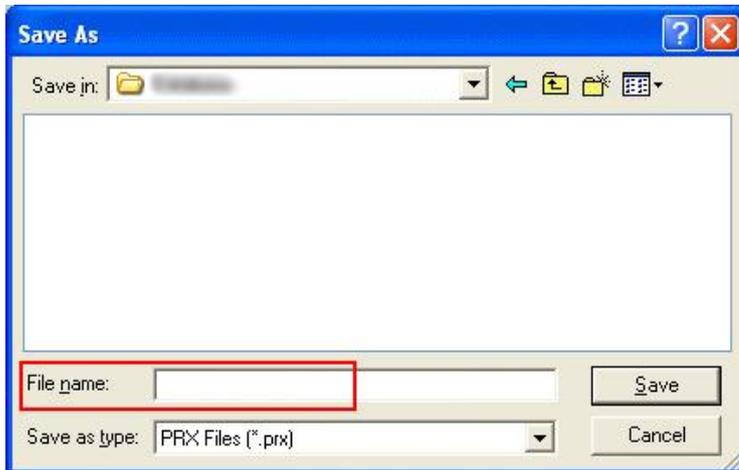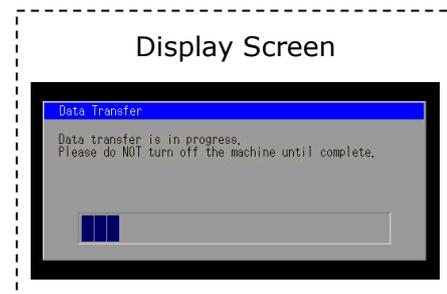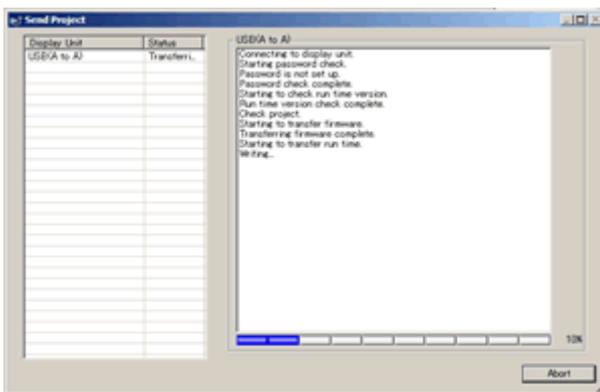
NOTE

When a file exists, the window that confirms whether or not to overwrite the file is displayed.

(6) The following dialog box appears during transfer and you can check the communication status.　(The display unit enters the Transferring mode and communication with the device such as a PLC is terminated.)


NOTE

・ If you receive the project files that use CF card data such as Recipe Function (CSV data) , the following dialog box will appear during transfer. Specify a place to save the CF card data in. Click [OK], and the [Receive Project] dialog box will return and transfer will be completed.

・ SP5000 series that is a replacement model is not equipped with a CF card slot. If the display unit type is changed to SP5000 series, the CF card setting will be replaced with the SD card setting automatically. To check or change the destination folder setting, see [5.1 Changing the setting of the external media to use].

(7) When transfer is completed, the status displayed in the dialog box will change from [Transferring] to [Complete Transfer]. Click [Close] to close the dialog box.
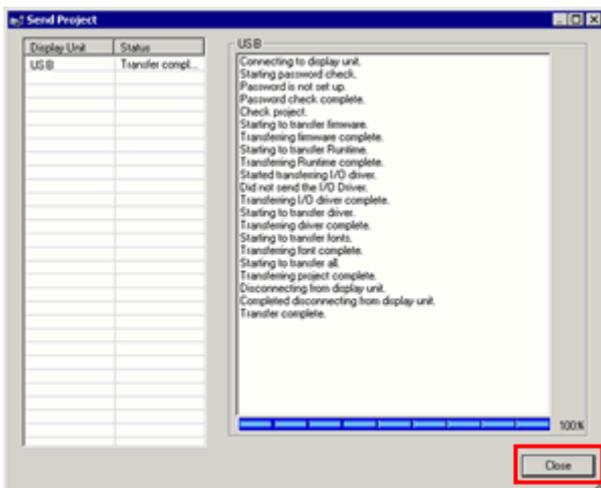
(8) Close the Transfer Tool.

3.4 Change the Display Unit Type

Open the received project file （*.prx） of GP-3310Ton GP-Pro EX and change the display unit type to SP5000 series.

(1) Open the received project file （*.prx） on GP-Pro EX.
(2) Click [System Settings]->[Display]->[Change Display] in [Project] menu and change the Display Unit type to the replacement model.

Note
When changing the Display Unit type, **If you check on [Convert Resolution]:** Horizontal width of the part and the text relative to the display resolution becomes 1.25 times larger. **If you uncheck [Convert Resolution]:** (* This is the default setting.) Size of the part and the text relative to the display resolution doesn't change but the empty space (80 pixels) appears on both right and left side of the screen area. After changing the Display Unit type, confirm size and location of the part/text and edit the screens if necessary.

(3) Click [Project]->[Save As] and save the changed project file.

3.5 Transfer the screen data to SP5000 series

Transfer the project file after the display unit type change to SP5000 series.

You can transfer data to SP5000 series via;

・ An USB transfer cable （model: CA3-USBCB-01）
・ An USB data transfer cable （model: ZC9USCBMB1）
・ A commercial USB cable （USB Type A/mini B）

・ A SD card/USB storage device

・ Ethernet

But, this section explains, as an example, how to transfer screen data with an USB transfer cable （model: CA3-USBCB-01）.

(1) Connect your PC and the GP unit of SP5000 series with a USB transfer cable. If the driver of the cable has not been installed on you PC, a dialog box will appear. Please follow the instructions.

| NOTE |
|---|
| ・The "Hardware Installation" dialog box as shown below may appear during installing the USB driver depending on the security level of Windows®.

  Click [Continue Anyway] to start installing the driver. When installation is completed, click [Finish]. |

Hardware Installation

The software you are installing for this hardware:

USB Link Cable ( )

has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

Continue Anyway   STOP Installation

(2) Trun on the power of SP5000 series. The "Initial Start Mode" screen will appear on the display unit. After transferring a project file once, this screen will not appear again.


(3) On the GP-Pro EX's State Toolbar, click the [Transfer Project] icon to open the Transfer Tool.
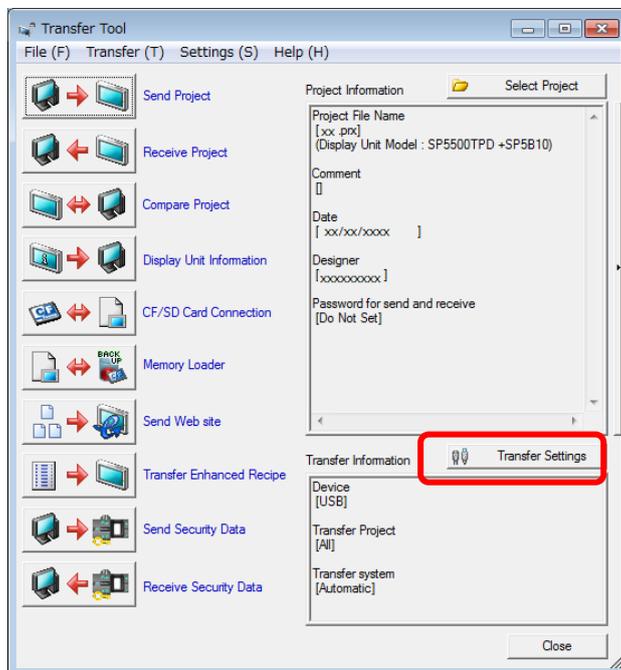
To transfer a different project file, click the [Select Project] button and select a project file.

(4) Make sure that the [Device] in the "Transfer Settings Information" is set to [USB].
If not, click the [Transfer Setting] button to open the "Transfer Setting" dialog box.
Select [USB] in the Communication Port Settings field and click [OK].
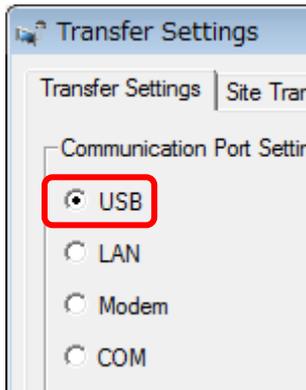
(5) Click [Send Project] to start transfer.
When the following dialog box appears, click [Yes]. This dialog box doesn't appear
when the same project file is sent again.
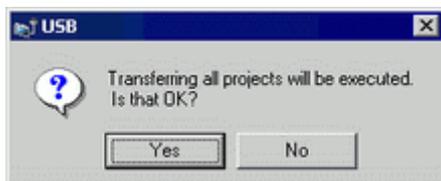
(6) The following dialog box appears during transfer and you can check the
communication status.　(The display unit enters the Transferring mode and
communication with the device such as a PLC is terminated.)
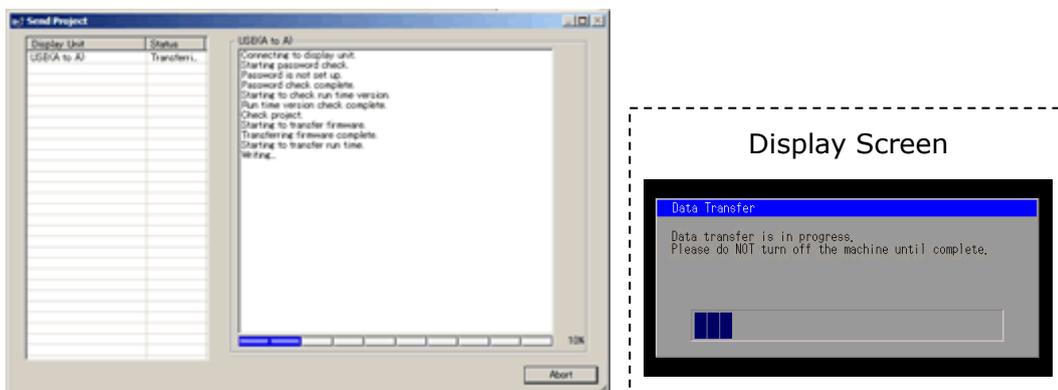
(7) When transfer is completed, the status displayed in the dialog box will change from [Transferring] to [Complete Transfer]. Click [Close] to close the dialog box.
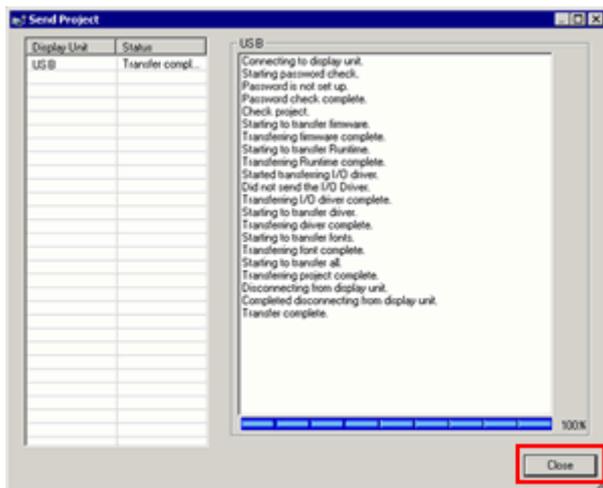
The display unit will be reset and a screen of the transferred project file will be displayed.

(8) Close the Transfer Tool.
(9) Click the [X] mark on top right of the screen or [Project]->[Exit] to close GP-Pro EX.

3.6 Differences of software

Some functions supported by GP-3310T are not supported by SP5000 series. For details of the supported parts and functions, refer to [Supported Featuers] of GP-Pro EX Reference Manual
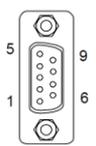
(http://www.pro-face.com/otasuke/files/manual/gpproex/new/refer/gpproex.htm) .

Chapter 4 Communication with Device/PLC

4.1 Shapes and Communication method of COM ports

	GP-3310T	SP-5B10 (Power box)
COM1	D-Sub9 (plug) RS-232C/422/485	
COM2	D-Sub9 (socket) RS-422/485	D-Sub9 (plup) RS-232C/422/485

4.2 Signals of COM ports

At the time of RS-422/485 communication, the signal and the pin array differ between

the COM2 port on GP-3310T and the COM2 port on SP-5B10 (Power box) .

Pin Arrangement	Pin No.	GP-3310T			SP-5B10 (Power box)		
		Signal Name	Direction	Meaning	Signal Name	Direction	Meaning
	1	TRMRX	-	Termination (Receive side:100Ω)	RDA	Input	Receive Data A (+)
	2	RDA	Input	Receive Data A (+)	RDB	Input	Receive Data B (-)
	3	SDA	Output	Send Data A (+)	SDA	Output	Send Data A (+)
	4	RS (RTS)	Output	Request for Send	ERA	Output	Data Terminal Ready A (+)
	5	SG	-	Signal Ground	SG	-	Signal Ground
	6	VCC *1	-	+5V±5% output 0.25A	CSB	Input	Send Possible B (-)
	7	RDB	Input	Receive Data B (-)	SDB	Output	Send Data B (-)
	8	SDB	Output	Send Data B (-)	CSA	Input	Send possible A (+)
	9	TRMTX	-	Termination (Receiver side: 100Ω)	ERB	Output	Data Terminal Ready B (-)
	Shell	FG	-	Frame Ground (Common with SG)	FG	-	Frame Ground (Common with SG)

*1: RI and VICC of Pin 9 are switched on the software.

VCC Output is not protected from overcurrent.

Please follow the current rating to avoid false operation or breakdown.

4.5 Cable Diagram at the time of replacement

◆GP-3310T's COM1 cable

It can be used for the COM1 or COM2 on SP-5B10 (Power box) as it is.

◆GP-3310T's COM2 cable

For the following case only, it can be used for the COM1 or COM2 on SP-5B10 (Power box) if the "COM Port Conversion Adapter (CA3-ADPCOM-01) " is added to the GP's side.

When an online adapter (CA4-ADPONL-01) is attached to the GP-3310T's cable, detach it.

- RS-422 cable (CA3-CBL422-01)
- 2-port adapter cable (CA3-MDCB11) +2-port adapter II (GP070-MD11)
- Multi-link cable (CA3-CBLMLT-01 (5m))
- Connector terminal conversion adapter (CA3-ADPTRM-01) +RS-422 cable (homemade cable)
- MPI cable (GP3000-MPI21-PFE)
- SIEMENS COM port conversion adapter (CA3-ADPSEI-01) +CA3-MPI-PGN-PFE or CA3-MPI-PG1-PFE

In all other cases, the operation is not guaranteed and it's recommended to prepare a new connection cable. To check the cable diagram, please refer to GP-Pro EX Device/PLC Connection Manual.

(http://www.pro-face.com/otasuke/files/manual/gpproex/new/device/index.htm
)

Chapter 5 Appendix

5.1 Changing the setting of the external media to use

If a CF card is used for GP-3310Tseries, after the display unit type of the project file is changed to SP5000 series, "a CF card" is automatically replaced with "a SD card" for the external media setting.

(1) To use a USB flash drive instead of a SD card ->Solution 1

(2) To check or change the SD card's data output destination folder setting
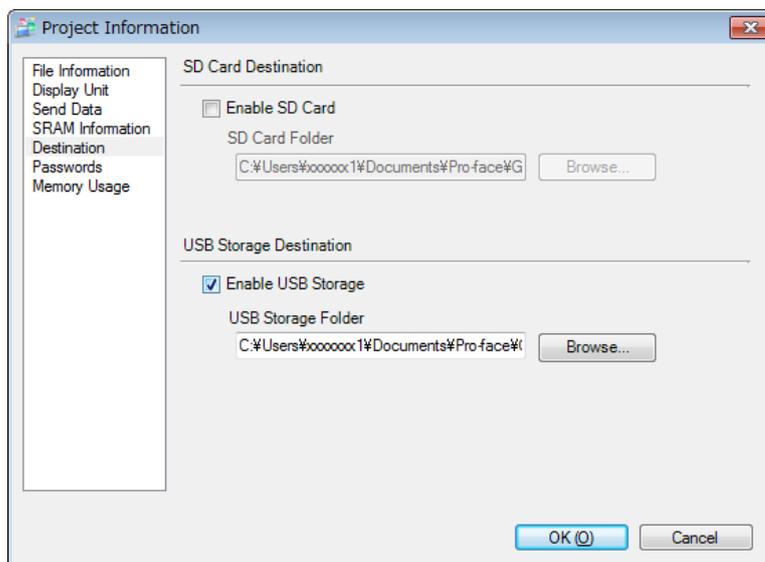   ->Solution 2

[Solution]

1. Change the SD Card setting to the USB storage setting following the steps below.
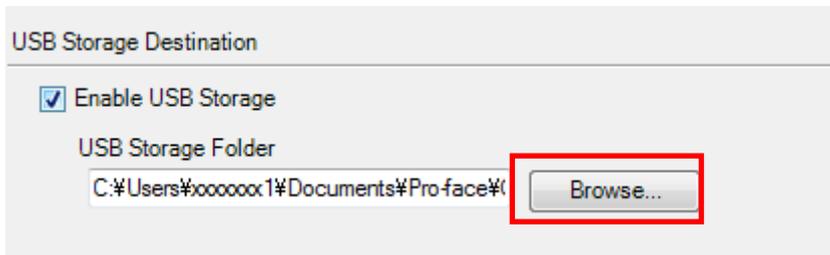
\<Procedure>

i. Click [Project]->[Information]->[Destination Folder].

ii. Uncheck "Enable SD Card" and check "Enable USB Storage.

iii. Click the [Browse] button and specify a destination folder.

iv. Click [OK] to confirm the setting.

v. Click [Project]->[Save] to save changes.

vi. Check each function that uses the CF card and replace the setting of [SD Card] with the one of [USB Storage].

NOTE
To check each function setting of GP-Pro EX, refer to GP-Pro EX Reference Manual.

2. Check and change the destination folder setting following the steps below.
   i. Click [Project]->[Information]->[Destination Folder].
   ii. The current setting is displayed.
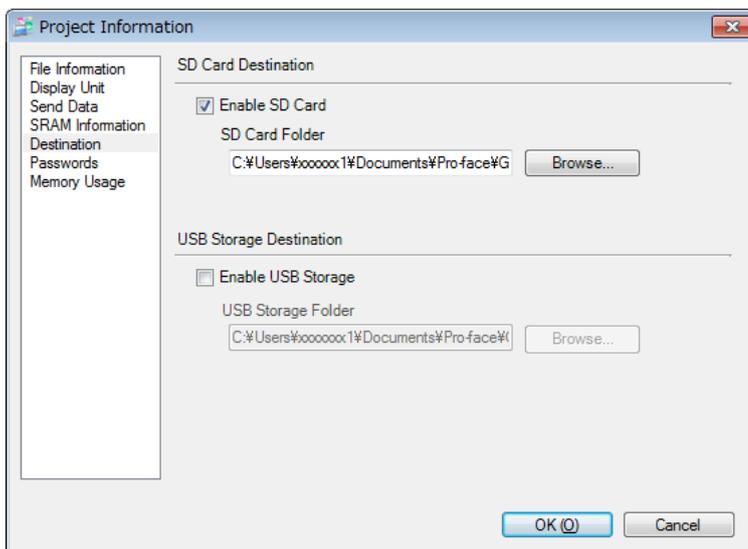
iii. After changing it, click [OK] to confirm the setting.

iv. Click [Project]->[Save] to save changes.